Device Development

PRICE $5.00

# POWER SUPPLY

# INSTRUCTION MANUAL

kepco inc.®

131-38 SANFORD AVENUE • FLUSHING 52, N. Y.
Area Code 212 IN 1-7000 • TWX # NY 4-5196

# INSTRUCTION MANUAL

## DC POWER SUPPLY

## MODEL PR 155-1, -1M

SERIAL NO. C 35530

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PARTS LIST

SCHEMATIC DIAGRAMS

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KEPCO, INC.
VOLTAGE REGULATED POWER SUPPLIES MODEL PR155-1, (-1M)

## A-1 ELECTRICAL AND PHYSICAL SPECIFICATIONS

....DC OUTPUT: 0-155 volts, at 0-1 amperes.

Output voltage continuously adjustable through two overlapping ranges: 0 to approximately 80 volts (Low); and approximately 80 volts to 155 volts (High). A residual voltage of not more than 150 mv (approximately 0.1% of the maximum output voltage) exists at the output when the control is set to zero, at no load.

....AC INPUT: 115 volts, ±10 v; 60 cps, ±5%; 3 amperes.

Changes in line frequency within stated frequency tolerances produce approximately equal and linear % changes in output voltage.

....LINE REGULATION: ±1% for ±10 volt change in AC line voltage; at maximum rated output voltage and current.

....LOAD REGULATION: Specified at maximum rated output voltage, with the load connected to the rear output terminals:

Less than 2% for a change in load current between full-load and half-load.

Less than 4% for a change in load current between full-load and quarter-load.

....RIPPLE: Less than 1% (rms) at maximum rated output voltage and current.

....AMBIENT OPERATING TEMPERATURE: -20 C to +55 C.

....STORAGE TEMPERATURE: -40 C to +85 C.

....DIMENSIONS: Height 3-1/2"; Width 19"; Depth 13-7/8" behind panel.

....COLOR: Kepco Standard Gray Hammertone.

....WEIGHT: 45 pounds.

....MOUNTING: Standard rack, or bench.

....METERS: (On Models with suffix "M" on Model number.)
Voltmeter 0-200 volts DC, 2-1/2".
Ammeter 0-1 amperes DC, 2-1/2".

PR 310-0.6 (Typical of all 3-1/2" high PR Models)

A-2 TERMINALS AND CONTROLS -

- (On Front Panel):

....POWER: Three position toggle switch "Low-Off-High" turns the Supply On and selects the DC output voltage range when set to either "Low" or "High" position. Pilot Light and Input Fuse.

....VOLTAGE CONTROL: Adjustable control for setting the output voltage within either range selected.

....DC: Overload breaker, Depress To Reset; and three 5-way output binding posts marked (-), (GND), and (+).

- (On Rear of Supply):

....DC: Additional 5-way binding posts for DC output.

....INPUT: Three-wire safety ground line cord.

## A-3 GENERAL OPERATING INSTRUCTIONS

This KEPCO Regulated Power Supply consists of a regulated, adjustable-voltage AC power source, supplied by a KEPCO "Flux-O-Tran" constant voltage transformer. The AC source is followed by a full-wave semiconductor rectifier and capacitive filter, of characteristically low internal impedance. The Supply is designed to furnish DC power, at voltage which can be set to any value over a continuously adjustable range; and to maintain that voltage constant within regulation specification as the line voltage and load change.

### ....INSTALLATION

The Power Supply is shipped without any internal packing material and may be put into operation immediately. It is equipped with carrying handles on the front panel, and is completely encased for bench use. It is also designed so that it may be installed directly on a standard 19-inch rack. Air is circulated through the side panel openings by the internal fan unit.

The ground pin (green wire) of the three-wire line cord is connected internally to the chassis for grounding purposes. When the two-prong receptacle adaptor supplied with the unit is used, the green pigtail lead must be connected to a suitable ground connection in order to ground the chassis.

### ....DC OUTPUT

The load regulation has been specified for operation with the load connected to the rear output terminals. When the load is connected to the front panel terminals, the load regulation will include any voltage drop in the internal bus connected between the front and rear binding posts.

The DC output is isolated from the chassis, and from the AC power line. Either Positive or Negative output terminal may be grounded. The Ground terminal on the back of the unit is equipped with a jumper link for this purpose. (Be sure to check the position of this link at the rear, before attempting to ground one of the front-panel output terminals).

The design of this Power Supply includes a very high value of capacitance across the output. Due to the charge developed across this capacitor, the voltage across the output terminals will sometimes fall at a slower rate when the output voltage is turned down, or off, depending on the value of internal bleeder resistance and the value of any external load still applied.

....SERIES, PARALLEL OPERATION

The output of two or more PR Models may be connected in series, up to a maximum condition of potential between chassis and either output terminal not to exceed 400 volts.

The output of two or more PR Models may be connected in parallel for higher current requirements. It is necessary to carefully adjust the voltage control of each Supply for equal current from each unit.

....OVERLOAD PROTECTION

The KEPCO "Flux-O-Tran" transformer has an inherent current limiting characteristic which permits operation into an output overload of short duration. However, the circuit breaker will release and interrupt the output current in the event of a sustained overload, primarily to protect the voltage control.

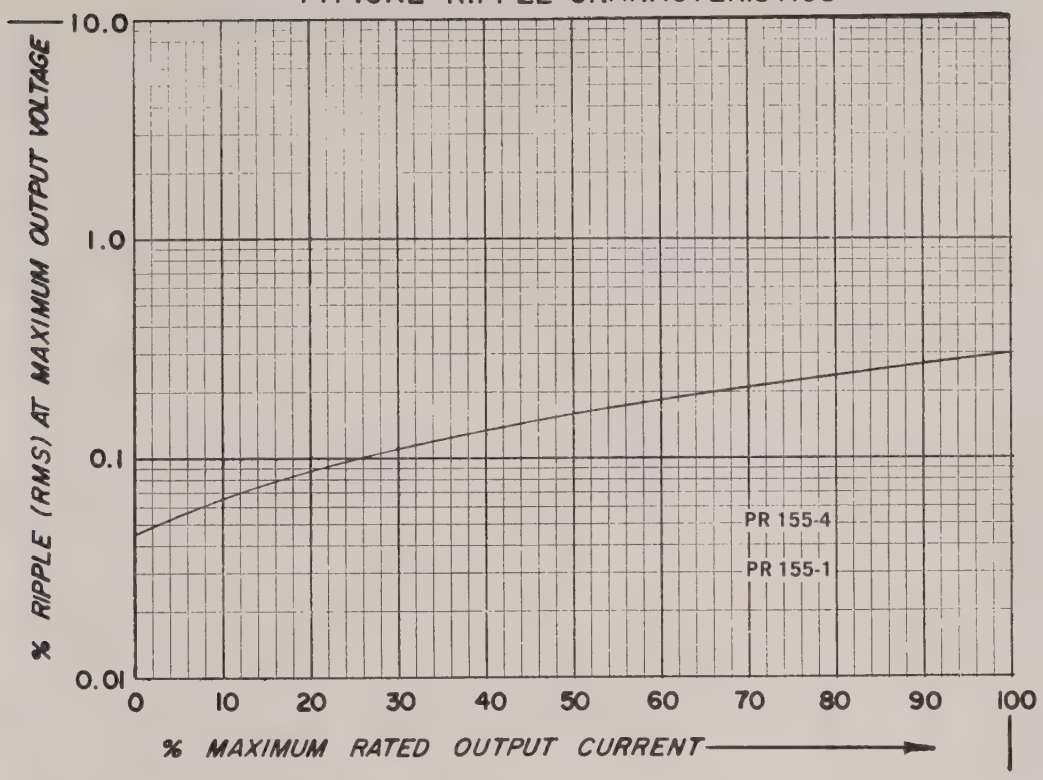
....MAINTENANCE

Conservatively rated components assure a long trouble free operating life. Under normal operating conditions no major maintenance of any kind should be required. The fan motor may be lubricated lightly at about six-month intervals, and an occasional careful brushing or dusting of the interior to remove any accumulations of dust is suggested.

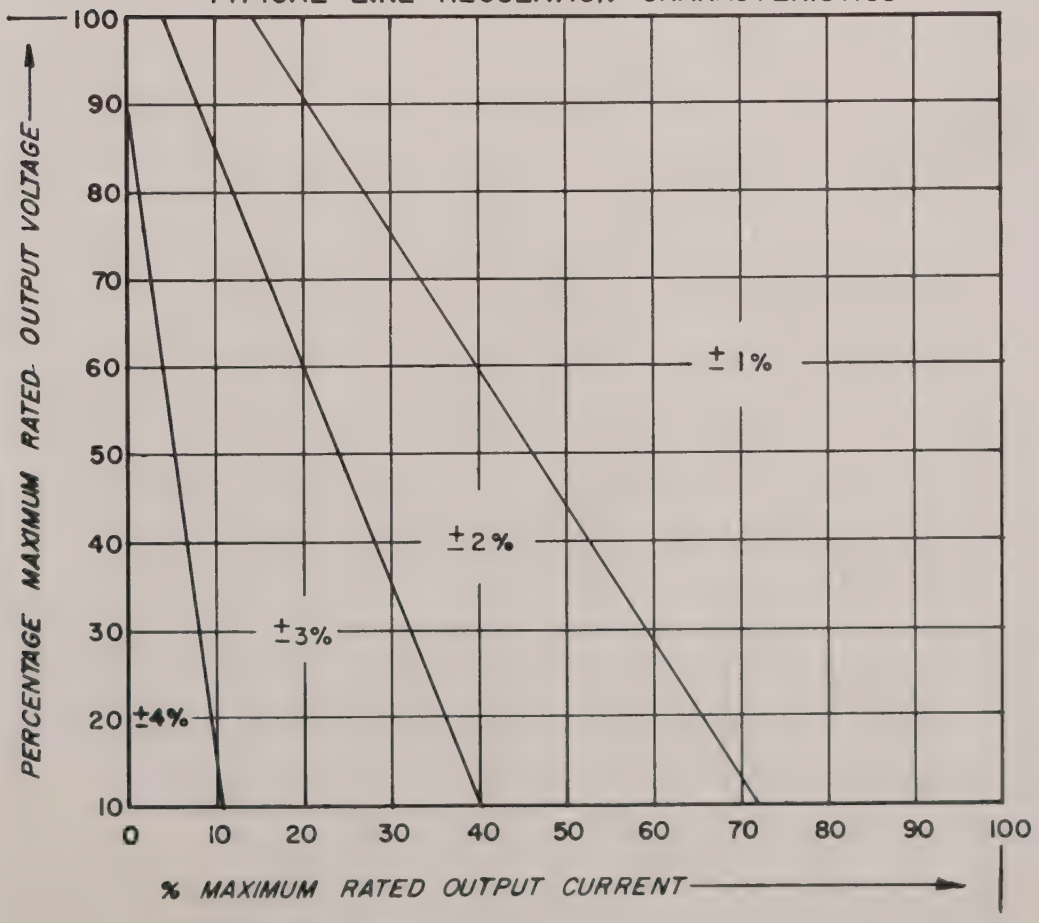
....FACTORY SERVICE

If it becomes necessary or desirable to return this equipment to KEPCO for repair, it should not be shipped to the factory without prior authorization and shipping instructions. The inclusion of detailed information with the unit, or in correspondence prior to its return, will greatly expedite the completion of repair work and return of the unit to the sender. In any correspondence to the factory about this Power Supply, the Model and Serial number should always be included.

## TYPICAL RIPPLE CHARACTERISTICS




## TYPICAL LINE REGULATION CHARACTERISTICS



# REPLACEMENT PARTS LIST

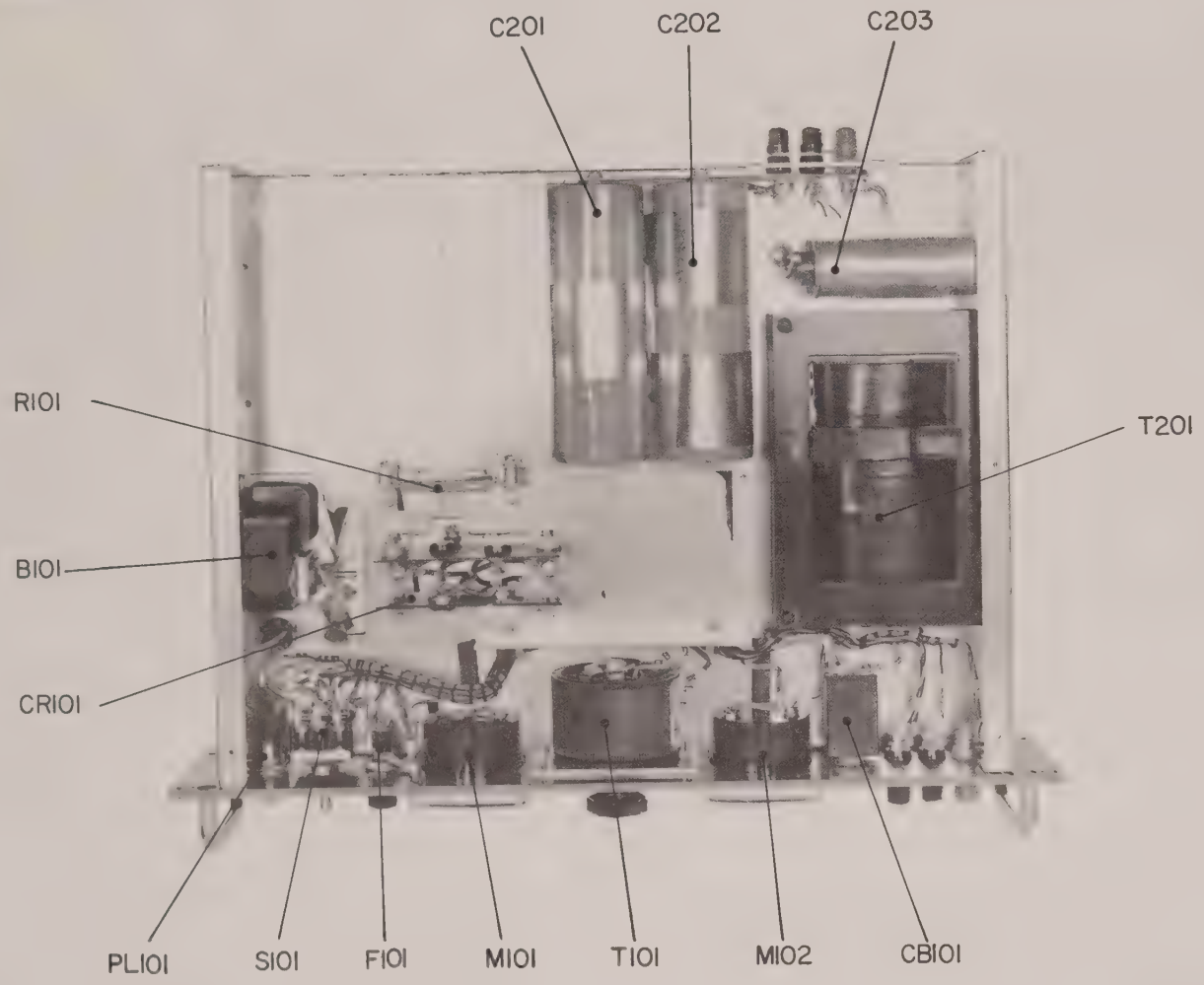
MODEL PR155-1, (-1M)
DWG NO BSK00255


CODE: 11-1361

| SCHEMATIC NO | QTY | DESCRIPTION | MFRS NAME AND PART NO | KEPCO PART NO |
|---|---|---|---|---|
| B201 | 1 | Motor | Barber-Colman KYAF764-1 | 148-0006 |
| | | Capacitors: | | |
| C201 | 1 | Paper, Can-type 2 µf, 660 v ac | General Electric 49F2322 | 117-0169 |
| C202,203 | 2 | Electrolytic, Can-type 1.1 K µf, 210v | Sangamo DCM | 117-0283 |
| CB101 | 1 | Switch, Circuit, Breaker 2 a | ETA 45 702-P | 127-0147 |
| CR201 | 1 | Rectifier,Silicon,Stack-type | Kepco 124-0126 | 124-0126 |
| F101 | 1 | Fuse, Instantaneous 5 a, 125 v | Bussmann MDX-5 | 141-0042 |
| M101 | 1 | Meter(Model PR155-1M only) 0-200 v, 2-1/2" | General Electric 8DW91V218AW2 | 135-0153 |
| M102 | 1 | Meter(Model PR155-1 M only) 0-1 a, 2-1/2" | General Electric 8 DW91A223BM2 | 135-0169 |
| PL101 | 1 | Pilot Light | General Electric NE-51 | 153-0024 |
| R201 | 1 | Resistor,Fixed,Power,Strip 1.5 K ohm, 5% 40w | Ward Leonard 40S1500 | 115-0977 |
| S101 | 1 | Switch 3PDT | Cutler-Hammer 7612-K2 | 127-0145 |
| T101 | 1 | Transformer | Superior 10B | 175-0422 |
| T201 | 1 | Transformer, Flux-O-Tran | Kepco Mag. 100-1254 | 100-1254 |

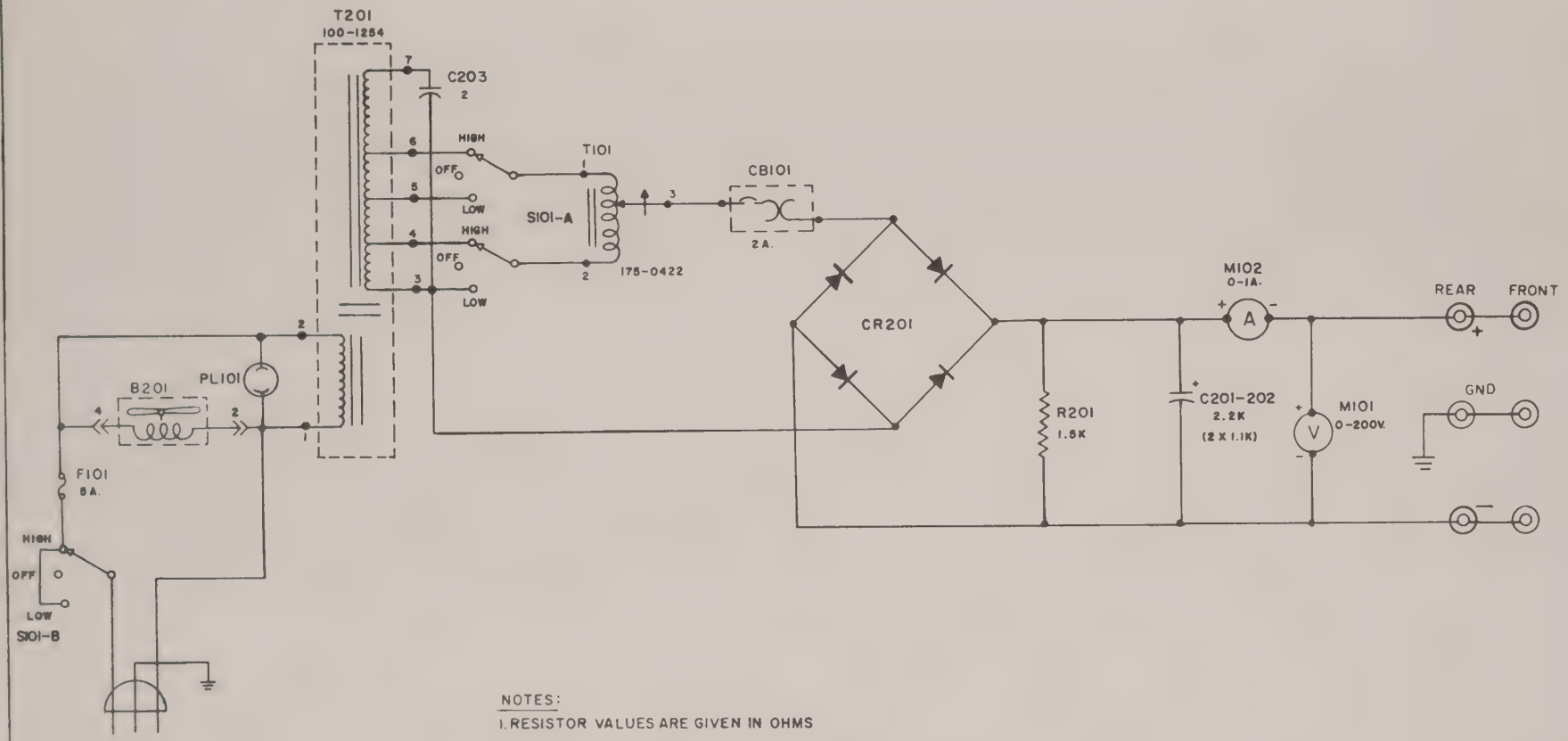
# FIELD REPLACEMENT LIST

| Kepco Part No. | Description | Recommended Replacement MFR. | Mfr. No. |
|---|---|---|---|
| 119-0003<br>119-0016 | Transistor PNP | Delco | 2N174 |
| 119-0022 | Transistor PNP | Tung-Sol | 2N382<br>2N1707 |
| 119-0034 | Transistor PNP | Delco | 2N1172 |
| 119-0035,<br>0036,0037 | Transistor PNP | Motorola<br>Clevite | 2N1167<br>CTP 3553 |
| 119-0048 | Transistor Unijunction | General Elec. | 2N1671A |
| 119-0020 | Transistor PNP | RCA | 2N398A |
| 119-0038 | Silicon NPN | Transitron | ST29 |
| 119-0004 | Transistor PNP | Delco | 2N277 |
| 119-0024 | Transistor NPN | Gen. Instrument<br>RCA<br>Sylvania | 2N1605<br>2N388<br>2N1308 |




| KEPCO INC. | |
|---|---|
| FLUSHING | NEW YORK |
| ITEM POWER UNIT | DES. 11-8-61 |
| | APPD |
| MODEL PR 155- 1M | DFTMP. HOLZMACHER |
| DWG No. BM01755 | CHKD M. R. |

B-M01731



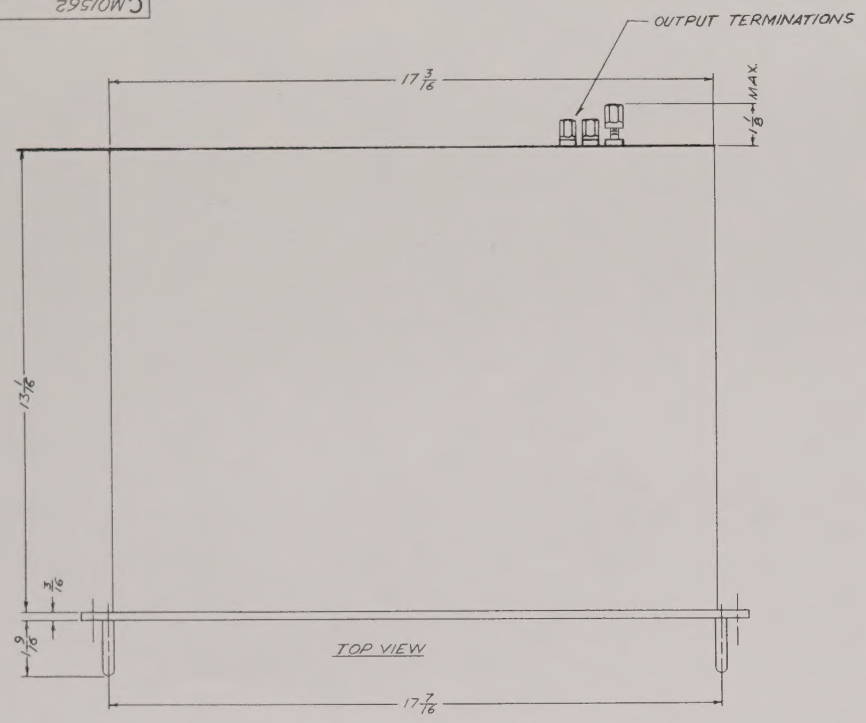

NOTES:

1. RESISTOR VALUES ARE GIVEN IN OHMS
2. CAPACITOR VALUES ARE GIVEN IN MICROFARDS
3. METERS M101 AND M102 USED IN MODEL PR 155-1M ONLY.
4. S101-A, S101-B GANGED TOGETHER.
5. ORDER REPLACEMENT PARTS BY KEPCO PART NUMBER PROVIDED IN PARTS LIST SECTION.

| KEPCO LABORATORIES | |
|---|---|
| FLUSHING NEW YORK | |
| ITEM: SCHEMATIC POWER UNIT | DES XX |
| | APPD XX |
| MODEL PR 155-1 | DFTM M.R. 10-27-61 |
| DWG NO B-M01731 | CHKD 164 |

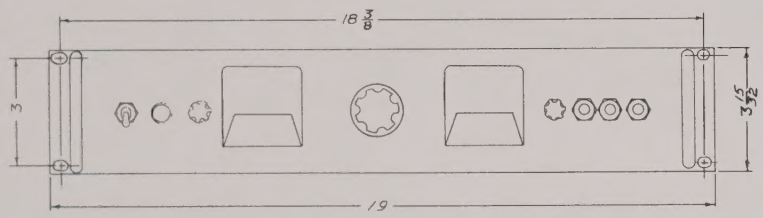
C M01562

| REVISIONS | DRAWN | CHKD. | APPD. | DATE |
|---|---|---|---|---|
| | | | | |




TOP VIEW

SIDE VIEW




FRONT VIEW

NOTES:
USED ON MODELS

PR-15-10
PR-310-06
PR-155-1
PR-380-2.5
PR-38-5

TOLERANCE UNLESS OTHERWISE SPECIFIED: FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 1/2°

KEPCO INC.
FLUSHING, N.Y.

TITLE: OUTLINE DRAWING

| DRAWN | CHECKED | APPROVED | DATE |
|---|---|---|---|
| R A | TRed | G Bykin | 8-29-61 |
| MODEL NO. 3½ PR - SERIES | | PART NO. | SCALE HALF |
| DWG. NO. C M01562 | | | |

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